

Claims:

1. A short pulse laser arrangement with preferably passive mode-locking, comprising a resonator (12) containing a laser crystal (14) as well as several mirrors (M1-M7; 22, 23, OC), one of which forms a pump beam coupling-in mirror (22) and one of which forms a laser beam out-coupling mirror (OC), and a multiple reflexion telescope (18) enlarging the resonator length, the resonator (12) in operation having a positive averaged dispersion over a wavelength range concerned, characterized in that the adjustment of the positive averaged dispersion of the resonator (12) is effected by means of the mirrors (M1-M7, 22, 23, OC) of the resonator (12), at least a few of which are designed as dispersive mirrors.

2. A short pulse laser arrangement according to claim 1, characterized in that the dispersion of the resonator (12) averaged over the wavelength range concerned is adjusted in a range of between 0 and 100 fs^2 .

3. A short pulse laser arrangement according to claim 2, characterized in that the averaged dispersion ranges

between 0 and 50 fs².

4. A short pulse laser arrangement according to any one of claims 1 to 3, characterized in that all the mirrors of the resonator (12) are dispersive mirrors.

5. A short pulse laser arrangement according to claim 4, characterized in that all the mirrors of the resonator (12) have a negative dispersion.

6. A short pulse laser arrangement according to any one of claims 1 to 5, characterized in that the mirrors (25, 26) of the multiple-reflexion telescope (18) are dispersive mirrors.

7. A short pulse laser arrangement according to claim 6, characterized in that the mirrors (25, 26) of the telescope (18) have a negative dispersion.

8. A short pulse laser arrangement according to any one of claims 1 to 7, characterized in that for an additional dispersion fine adjustment, a pair of glass wedges (30) with positive dispersion is arranged in the resonator (12).

9. A short pulse laser arrangement according to any one of claims 1 to 8, characterized in that the Kerr-lens mode-locking principle is used for passive mode-locking.

10. A short pulse laser arrangement according to any one of claims 1 to 8, characterized in that a saturable absorber (M4) is provided for passive mode-locking.

11. The use of a short pulse laser arrangement according to any one of claims 1 to 10 for material processing.